S.N. 09/401383

FIG. 1

CARD LAYOUT
STYLE SPECIFICATION

CARD DISPLAY SCHEMA

CARD-BASED DOCUMENT CONTENT
(SGML AND NON-TEXTUAL MEDIA)

12 — PRESENTATION STYLE
TRANSFORMER

CARD-BASED PRESENTATION
SPECIFICATION

14 — CARD-BASED PRESENTATION
GENERATOR

FORMATTING OBJECT
DESCRIPTIONS (FOD)

FIG. 2

```
<CardLayoutStyle Name=name...>
   <Options size=card_size...>...</Options>
   ...
   <BackgroundList>
    <Background name=name Func=function_name>
     <object properety=...></>
     ...
    <Background>
    <Background name=name Func=function_name>
     <object property=...></>
     ...
    <Background>
    ...
   </BackgroundList>...
   <ForegroundList>
    <Foreground name=name Func=function_name>
     <object property=...></>
     ...
    </Foreground>
    <Foreground name=name Func=function_name>
     <object property=...></>
     ...
    <Foreground>
    ...
   <ForegroundList>
   <CardSeq name=name Context=context Type=type Content=content>
    <Background StyleRef=background_name>
   <CardSeq>
   <CardSeq name=name Context=context Type-type Content=content>
    <Background StyleRef=background_name>
   </CardSeq>
   ...
   <Card name=name Context=context Type=type Content=content>
    <Foreground StyleRef=background_name></>
   </Card>
   <Card name=name Context=context Type=type Content=content>
    <Foreground StyleRef=background_name></>
   </Card>
   ...
<CardLayoutStyle>
```
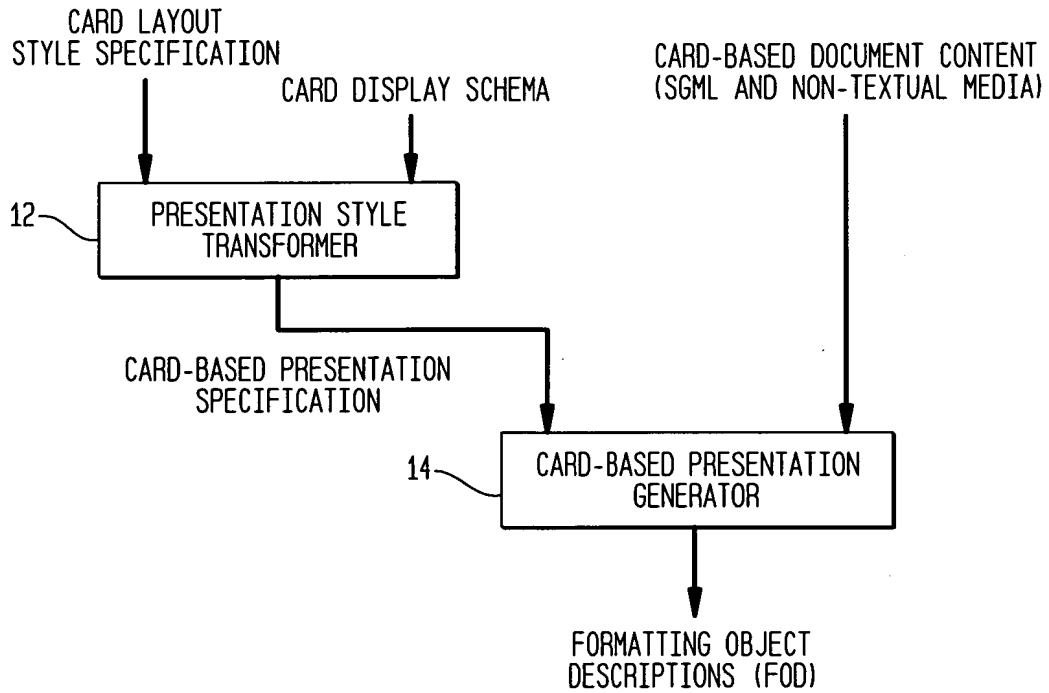
FIG. 3

```
<CardLayoutStyle Name=name...>
    <Options size=card_size...>...</Options>
    ...
    <BackgroundList>
      <Background name=name Func=function_name>
        <object property=...></>
        ...
      </Background>
      <Background name=name Func=function_name>
        <object property=...></>
        ...
      </Background>
      ...
    </BackgroundList>...
    <ForegroundList>
      <Forground name="TextByGfxForeground" Func="TextByGfxForeground">
        <Object Name="TextByGfxTitle"
                Coords="180,1395,1150,1305"
                Type="Field"
                Func-"TitleText"
                Context="Card,CardX,CardTitle"
                FontSize="15"
                FontStyle="Bold"
                FontColor="blue"
                Content="CardTitle"></>

        <Object Name="GfxContent"
                Coords-"357 94 881 693"
                Type="Graphics"
                Func="GfxContent"
                Context="Card,CardX,AnyDocX,Figure,Graphic"
                Content="Graphic"
                AIU="Card,CardX,AnyDocX,Figure,AIUDoc,ROI"></>
        ...
      </Foreground>
      ...
    </ForegroundList>
    <CardSeq name="TextByGfxSeq Type="TextByGfx"
            Context="PlantLevel,CardSeq" Content="">
      <Background StyleRef="NormalBackground">
    </CardSeq>
    ...
    <Card name="TextByGfxCard" Type="TextByGfx"
          Context="PlantLevel,CardSeq,Card"Content="">
      <Foreground StyleRef="TextByGfxForeground"></>
    </Card>
    ...
<CardLayoutStyle>
```

FIG. 4

```
<MACRO_Declaration>
  <ObjectGroup name="project_resource">
    MACRO_Resource(stylename, type, filename)</>
    MACRO_Resource(stylename, type, filename)</>
    ...
  </ObjectGroup>
  MACRO_name(stylename, parameters)</>
  MACRO_name(stylename, parameters)</>
  ...
</MACRO_Declaration>
<ContentMapping>
  <ElementRule Context=doc_tags>
    <DefineVar name=...>
    <DefineVar name=...>
    ...
  <CaseExpr key=...>
  <CaseClause matchvalue=...>
  <AddObject otype=...stylename=...>
  <ProcessGrove command=...></>
  ...
  <AddGroup groupname=...></>
  ...
  </AddObject>
  </CaseClause>

  <CaseClause matchvalue=...>
  <AddObject otype=...stylename=...>
  <ProcessGrove command=...></>
  ...
  <AddGroup groupname=...></>
  ...
  </AddObject>
  </CaseClause>
  </CaseExpr>
  </ElementRule>

  <ElementRule...>...</>
  ...
</ContentMapping>
```

FIG. 5

```
<MACRO_Declaration>
   ...

   ...

   MACRO_TitleField(TextByGfxTitle, "180,1395,1150,1305,"$CardTitle_RTF$, 15", "bold", "blue")
   ...
</MACRO_Declaration>

<ContentMapping>
   ...
   <ElementRule context="(Card CardX)">
   <ProcessGrove
        command="process-matching-children CardTitle">
   <ProcessGrove
        command="process-matching-children ANYDOCX">
   </ElementRule>

   <ElementRule context=(Card CardX CardTitle)">
   <DefineVar name="$CardTitle_RTF"forvalue="(RTF-TitleGen(current node))"></>

     <CaseExpr key="(CardType(current-node))">
       <CaseClause matchvalue="GfxonlyCard">
         <AddObject otype="Field" stylename="GfxOnlyTitle"></>
       </CaseClause>
       <CaseClause matchvalue="TextByGfxtitle">
          <AddObject otype="Field" stylename="TextByGfxTitle"></>
       </CaseClause>
       <CaseClause matchvalue="else">
          <AddObject otype="Field" stylename="TextByGfxTitle"></>
       </CaseClause>
     </CaseExpr>
   </ElementRule>
   <ElementRulk>...</>
   ...
</ContentMapping>
```

FIG. 6

CARD DISPLAY
SCHEMA

CARD LAYOUT
STYLE SPECIFICATION

22 — RESOURCE GENERATOR

24

STYLE PROCEDURALIZER

26 — CARD-BASED CONTEXT
TREE BUILDER

CONTEXT TREE

28 — CONTENT NODE
PATH WALKER

CONTEXT PATHS

30 — CONTENT MAPPING
RULE GENERATOR

CARD-BASED PRESENTATION
SPECIFICATIONS

FIG. 7

```
<DisplaySchema Objectype="Field" Name="TextByGfxTitle">
    <Argument name="StyleName" type="Required"
        AvailVule="#ANY_UNIQUE_NAME">
    <Argument name="vertices" type="Required"
        Availalue="#ANY_2POINTS">
    <Argument name="TitleRTF" type="Optional"
        DefaultValue=$CARDTitle_RTF$">
    <Argument name="FontSize" type="Optional"
        DefaultValue="15"AvailValue="#Number">
    <Argument name="Fontstyle" type="Optional"
        DefaultValue="Regular"AvailValue="Bold,Regular,Italic">
    <Argument name="FontColor" type="Optional"
        DefaultValue="Black"AvailValue="#Any_Color_Name or RGB Stroke">
</DisplaySchema>
```
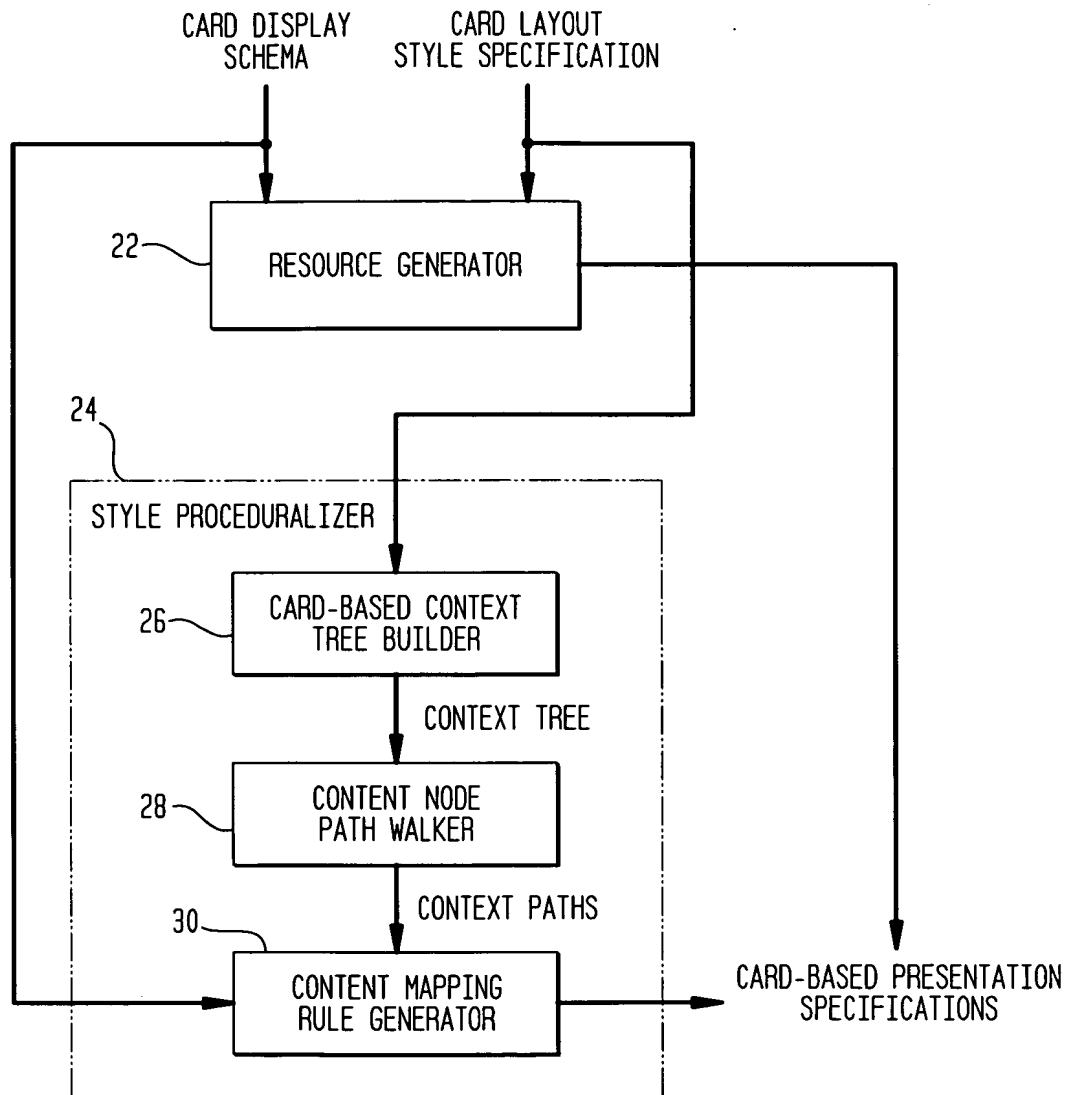
FIG. 8

```
<DisplaySchema Objective=object_type Name=macro_name or varaiable_name>
    <Argument name=...type=...
        DefaultValue=...AvailValue=...>
    <Argument name=...type=...
        DefaultValue=...AvailValue=...>
    <Argument name=...type=...
        DefaultValue=...AvailValue=...>
        ...
</DisplaySchema>
```

FIG. 9

```
<DisplaySchema Objectype="DefineVar" Name="$CardTitle_RTF$">
    <Argument name="RTF-Gen" type="Required"
        AvailValue="#ANY-DSSSL-FUNC-NANME">
    <Argument name="context" type="Optional"
        DefaultValue="(Card Title)">
</DefaultSchema>
```

FIG. 10

```
<DisplaySchema Objective="Resource"MacroName="MACRO_Resource">
    <Argument name="Format" type="Optional"
        DefaultValue="icon"AvailValue="icon,bitmap,sharedscript,menubar">
    <Argument name="StyleName" type="Required"
        AvailVule="#ANY_UNIQUE_NAME">
    <Argument name="InstanceNAme" type="Optional"
        DefaultValue=""AvailValue="#ANY_STRING">
    <Argument name="FileName" type="Required"
        AvailValue="#ANY_STRINGr">
</DisplaySchema>
```

FIG. 11

CardManual [R Node]

↓

PlantLevel [T Node]

↓

CardSeq [CT node] Type:GfxOnly,TextByGfx

↓

Card [CT node] Type:GfxOnly, TextByGfx

↓

CardX [T node]

↙   ↘

AnyDocX [CT node]   CardTitle [C node]

↙

Figure [T node]

↙   ↘

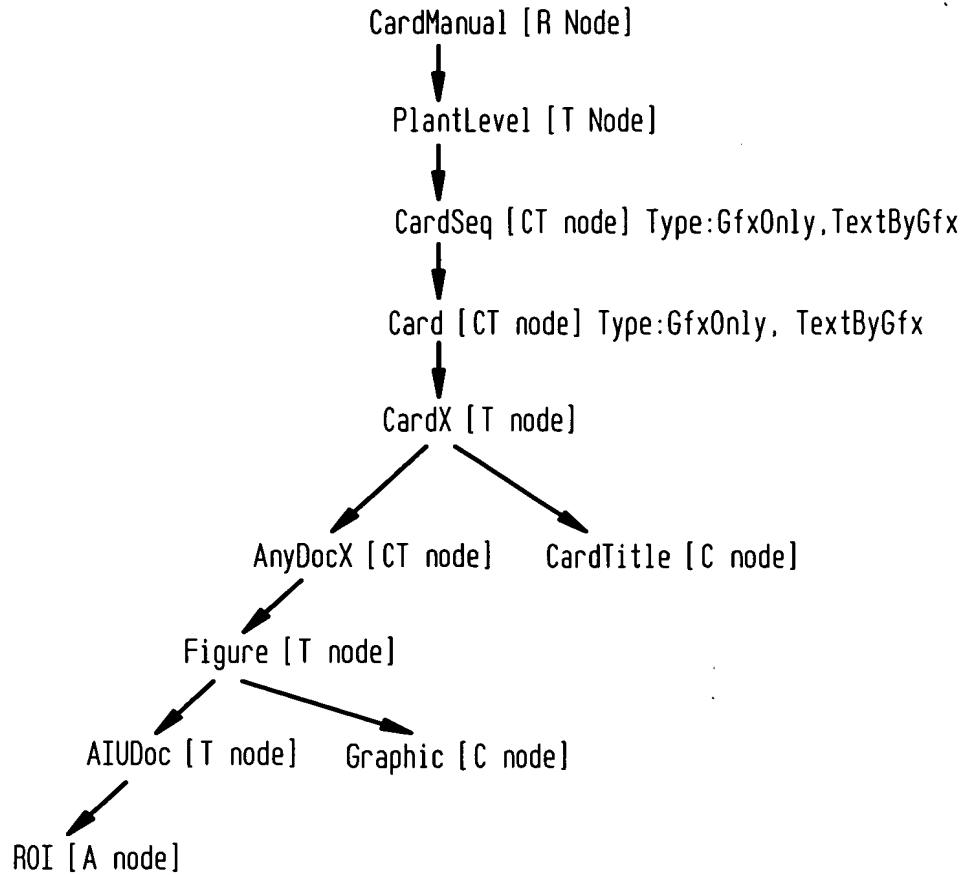AIUDoc [T node]   Graphic [C node]

↙

ROI [A node]

FIG. 12

1. CardManual, PlantLevel, CardSeq
2. CardManual, PlantLevel, CardSeq, Card
3. CardManual, PlantLevel, CardSeq, Card, CardX, CardTitle
4. CardManual, PlantLevel, CardSeq, Card, CardX, AnyDocX
5. CardManual, PlantLevel, CardSeq, Card, CardX, AnyDocX, Figure, Graphic
6. CardManual, PlantLevel, CardSeq, Card, CardX, AnyDocX, Figure, AIUDoc, ROI

FIG. 13

CONTEXT PATHS   DISPLAY SCHEMA ───────▶

GET NEXT PATH ◀──┐

STOP ◀──── YES ──── LAST PATH?

NO

VISIT NEXT NODE

END OF PATH? ── YES ──▶

NO

NODE VISITED BEFORE? ── YES ──▶

NO

CREATE A CONTEXT ATTRIBUTE VALUE
FOR A NEW <ElementRule>

CREATE <DefineVar>s
FOR THE RULE MAPPING

CREATE <CaseExpr> OR <IfExpr>
IF MULTIPLE NODE TYPES EXIST

NODE CATEGORY?

NO

[R Node]   [C Node]   [T Node]   [CT Node]   [A Node]

| CREATE CARD-BASED DOCUMENT OVERALL STRUCTURE | CREATE <AddObject> AND/OR <AddGroup> | CREATE <ProcessGrove> | CREATE <AddObject>, <AddGroup> THEN CREATE <ProcessGrove> | CREATE PREDEFINED ASSOCIATED CONSTRUCTS |

FIG. 14

```
(A) Transition Node: CardX
<ElementRule context="(Card CardX)">
<ProcessGrove
  command="process-matching-children CARDTITLE"></>
<ProcessGrove
  command="process-matching-children ANYDOCX"></>
<ElementRule>

(B) Content Node: CardTitle (See Figure 5)

(C) Content Transition Node: CardSeq
<ElementRule context="(PlantLevel CardSeq)">
<DefineVar name="$Page_currentObject$"
           strValue="(currentObjectGen (current-node))"> </>
<DefineVar ...> </>
...
<CaseExpr key="(cardSeqType (current-node))">
<CaseClause matchval="GfxOnly">
<AddObject otype=Background styleName="GfxOnlyBackground">
<ProcessGrove
  command="process-matching-children CARD"></>
</AddObject>
</CaseClause>

<CaseClause matchval="TextByGfx">
<AddObject otype=Background styleName="NormalBackground">
<AddObject otype=Button styleName="Top"></>
<AddObject otype=Button styleName="First"></>
<AddObject otype=Button styleName="Previous"></>
<AddObject otype=Button styleName="Next"></>
<AddObject otype=Button styleName="Last"></>
<AddObject otype=Button styleName="Audio"></>
<AddObject otype=Button styleName="Animate"></>
...
<ProcessGrove
  command="process-matching-children CARD"></>
</CaseClause>

</CaseClause matchval="else">
...
</CaseClause>

</CaseExpr>
</ElementRule>
```
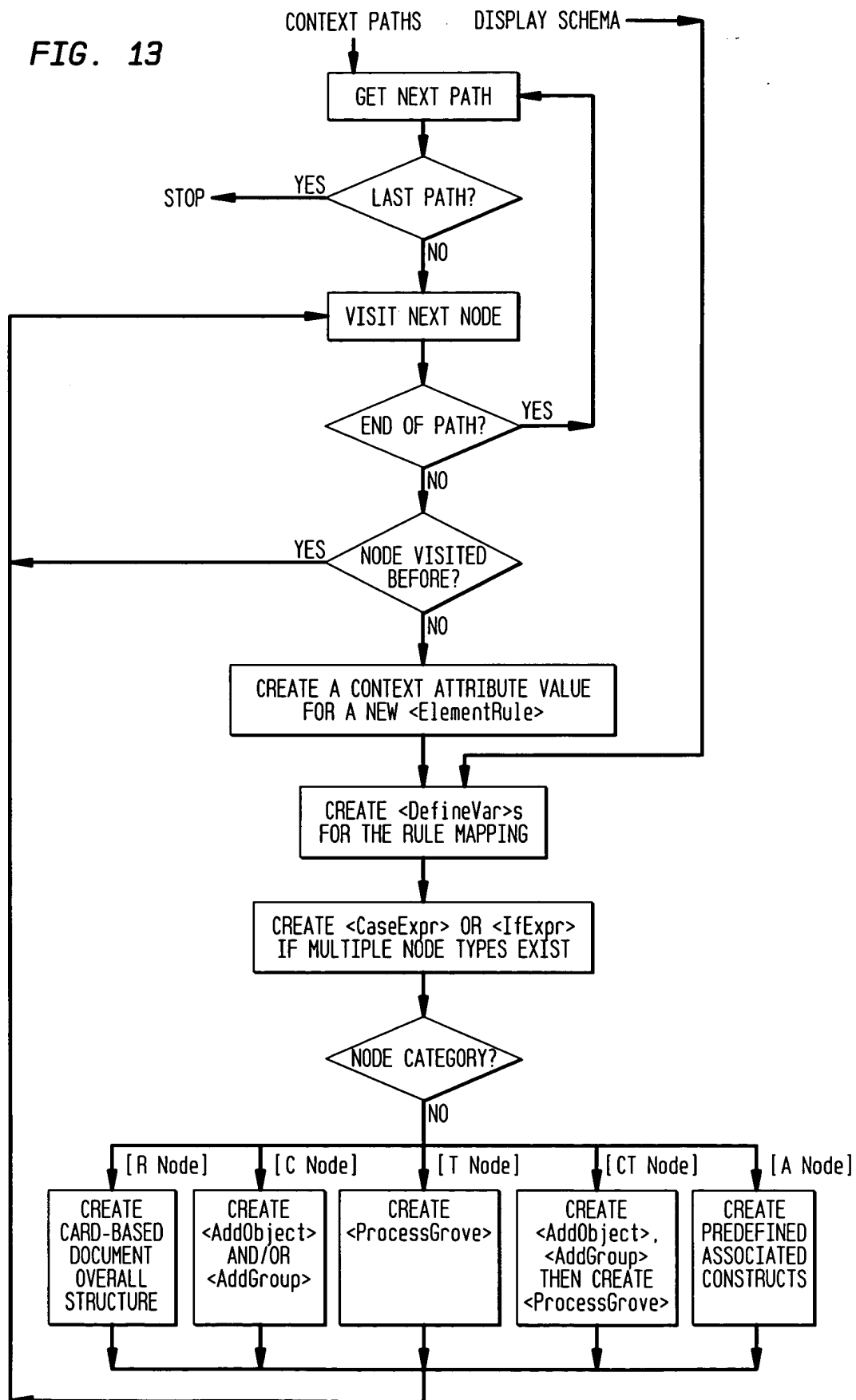
FIG. 15

```
(D) ROOT NODE: CardManual
<ElementRule context="CardManual">
 <AddObject otype=CardManualLayout styleName="">
  <DefineVar name="$BookTOC$" strValue="(TOC-Gen (current-node))"> </>
  <AddObject otype=ToolBookManual styleName="IMIS_ToolBook">
   <AddGroup groupName="Project          _Resources"> </>
   <AddObject otype=MainViewer styleName="MainViewer">
    <ProcessGrove
      command="process-matching-children PLANTLEVEL"></>
    <AddGroup groupName="IMIS_MiscViewersContent"> </>
   </AddObject>
    <AddGroup groupName="IMIS_MiscViewers"> </>
  </AddObject>
 </AddObject>
</ElementRule>

(E) Associated Node: ROI
<ElementRule context="(Card CardX AnyDocX Figure AIUDoc ROI)">
<DefineVar name="$AiyName$"
           strValue="(getattr NAME (current-node))"> </>

<CaseExpr key="(cardtype (current-node))">

<CaseClause matchval="GfxOnly"> ...</CaseClause>
<CaseClause matchval="TextByGfx">
 <CaseExpr key="(ROI-TYPE (current-node))">
  <CaseClause matchval="polygon">
  <AddObject otype=Polygon styleName="GfxContent-AIU-Poly"></>
   </>
  <CaseClause matchval="callout"> ..</>
  <CaseClause matchval="NameCallout"> ..</>
   ...
 </CaseExpr>
</CaseClause>
<CaseClause matchval="else">
  <EmptySosofo>
</CaseClause>

</CaseExpr>
</ElementRule>
```

FIG. 16

```
        CARD-BASED                    CARD-BASED DOCUMENT CONTENT
  PRESENTATION SPECIFICATION          (SGML AND NON-TEXTUAL MEDIA)
              │                                    │
              │                                    │
              ▼                                    │
  42──┐  ┌──────────────────┐                      │
       │  │   PRESENTATION   │                      │
          │ CONSTRUCT MAPPER │                      │
          └──────────────────┘                      │
                   │                                 │
                   │                                 │
         CARD-BASED DSSSL                            │
         STYLE SPECIFICATIONS                        │
                           ▼                    ▼
                  44──┐  ┌──────────────────┐
                       │  │    CARD-BASED    │
                          │  DSSSL PROCESSOR │
                          └──────────────────┘
                                   │   CARD-BASED DOCUMENT
                                   │   FLOW OBJECT TREE
                                   ▼
                  46──┐  ┌──────────────────┐
                       │  │       FOD        │
                          │    CONVERTER     │
                          └──────────────────┘
                                   │
                                   ▼
                          FORMATTING OBJECT
                          DESCRIPTIONS (FOD)
```
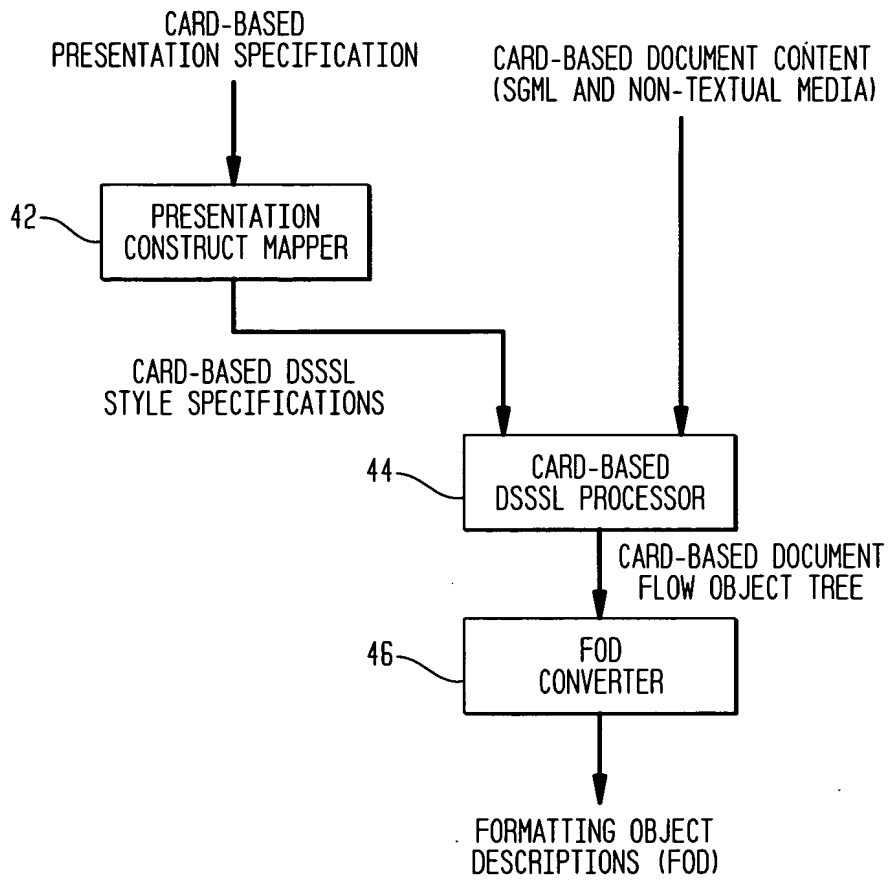
FIG. 17

```
(element(Card CardX CardTitle)
   (sosofo-append
      (makeFODfo FOtype:"DefineVar"
                 FOname:"$CardTitle_RTF$"
                 FOinstruction:(RTF-TitleGen(current Node)))
    (case(cardType(current Node)))
       (("GfxOnly")
          (makeFODfo Fotype: "StartTag"
                     FOname: "Field"
                     FOinstruction:(AttributeGen GfxOnlyTitle)))

       (("TextByGfx")
          (makeFODfo FOtype: "StartTag"
                     FOname: "Field"
                     FOinstruction:(AttibuteGen TextByGfxTitle)))

       (else
          (makeFODfo FOtype: "StartTag"
                     FOname: "Field"
                     FOinstruction:(AttributeGen TextByGfxTitle)))

   )
  )
)
```

FIG. 18

```
(define (AttributeGen type)
(case type
 (("TextByGfxTitle")
  (string-append
   " FontSize="\15\" "
   " FontStyle= "\bold\" "
   " FontColor="\0,0,255\" "
   " RGBFILL=\"255,255,255\" "
   " TRANSPARENT=\"true\" "
   " VERTICES=\"180,1395,1150,1305\" "
   " RICHTEXT=\"$CardTitle_RTF$\" "
   " FONTFACE=\"Times New Roman\" "
   " ACTIVATED=\"true\" "
   " BASELINES=\"false\" "
   " BORDERSTYLE=\"none\" "
   " FIELDTYPE=\"wordWrap\" "
   " SCROLL=\"0\" "
   " SPACING=\"1\" "
   " INDENTS=\"0,0,0\" "
   " TABSPACING=\"360\" "
   " TABTYPE=\"left\" "
   " TEXTALIGNMENT=\"left\" "
   " NAME=\"TitleField\""))
 (("GfxOnlyTitle")
  ...)
 ...
)
(define (makeFODfo #; key FOtype FOname FOinstruction)
 (case FOtype
  (("StartTag")
   (make FOD-Instruction
       data: (string-append "<" FOname FOinstruction "> "</>" )))
  (("DefineVar")
   (make FOD-Instruction
       data: (string-append "<DefineVar name="FOname "value=" FOinstruction ">")))
  (("EndTag")
   (make FOD-instruction
       data: (string-append "</>")))
  ...
  (else
   (make FOD-instruction
       data: (string-append "newFlowObjecttype")))
 )
```

FIG. 19

```
<CardFormattingBook property=...>
    <Resource property=...>...</Resource>
    <Resource property=...>...</Resource>
    ...
    <MainViewer property=...>
     <StartBkgnd property=...>
       <Object property=...>

      ...
    <StartPage property=...>...</StartPage>
    <NextPage property=...>
     <Field Name="TitleField"
            TextAlignment="left"
            TabType="left"
            TabSpacing="360"
            Scroll="0"
            FieldType="wordwrap"
            BorderStyle="none"
            BaseLines"false"
            Activated="true">
            Fontface="Time New Roman"
            Vertice="180,1395,1150,1305"
            Transparent="True"
            RichText=

             "(\rtf1\anai \deff5\deftab360\deflang1033
             (\fonttb1
             (\f1\froman\fcharset2\fprg2 Symbol;)
             (\f2\ftech Marlett;)
             (\f4\froman\fcharset0\fprg2 Times New Roman;)
             (\f5\fswiss\fcharset0\fprg2 Arial;)
             (\f10\fswiss\fcharset0\fprg2 System;))
             (\colorthl;\red0\green0\blue0,\red0\green0\blue255;
             \red255\green0\blue0;\red255\green255\blue255;)
             \pard\plain \f4\fs20 (\b\i\f5\fs36\of1 co2 Purge System 1)
             )"
            RGBFill="255,255,255"
            fontsize="15"
            fontStyle="bold"
            rgbStroke="0,0,255"
            >
    </NextPage>
    <NextPage property=...>...</NextPage>
    ...
    </StartBknd>
    <NextBkgnd property=...>...</NextBgrnd>
    ...
  <MainViewer>
  <Viewer property=...>...</Viewer>

  ...
</CardFormattingBook>
```

FIG. 20

```
<CardFormattingBook property=...>
    <Resource property=...>...</Resource>
    <Resource property=...>...</Resource>
    ...
    <MainViewer property=...>
      <StartBkgrnd property=...>
        <Object property=...>
        ...
        <StartPage property=...>
          <Object property=...>
          ...
        </StartPage>
        <NextPage property=...>
          <Object Property=...>
          ...
        </NextPage>
        <NextPage property=...>
          <Object property=...>
          ...
        </NextPage>
        ...
      </StartBkgnd>
      <NextBkgnd property=...>...</NextBkgnd>
      ...
    </MainViewer>
    <Viewer property=...>...</Viewer>
    <Viewer property=...>...</Viewer>
    ...
</CardFormattingBook>
```